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# Unlocking the Potential of Schools as Community Resilience Hubs



## Summary

New analysis from Generation180 reveals that America's schools are at the heart of our nation's disaster response system — and dangerously underprepared. More than half of FEMA's designated disaster shelters are K-12 schools, yet less than 0.1% of K-12 schools nationwide have onsite battery energy storage systems to keep critical systems, such as lighting, HVAC, refrigeration, and medical equipment, running during outages. With natural disasters more than tripling since 1990 and millions of students already living in disaster-prone counties, the gap between the role schools play and the resources they have is putting communities at risk.



## Role of K-12 schools in disaster preparedness

Climate change is causing extreme weather and natural disasters to strike with increasing frequency and intensity. Since 1990, the number of weather-related FEMA disaster declarations has tripled. With nearly 100,000 public schools geographically dispersed to serve all communities across the country, schools are well-positioned to serve as local disaster shelters. According to researchers at the Annenberg Institute at Brown University, approximately 25% of all public schools are located in census tracts that face a very high risk from natural hazards, including coastal flooding, hurricane, heat wave, and wildfire.

School campuses are valuable neighborhood hubs that support a variety of community needs beyond educating the next generation. A new analysis by Generation180 found that schools play a central role in the national disaster response system. However, schools currently lack the resources and energy resilience infrastructure to continue operation as a shelter during a power outage.



- THE AUDITORIUM OF TWIN VALLEY ELEMENTARY/MIDDLE SCHOOL IN VIRGINIA WAS USED AS AN EMERGENCY SHELTER AND REUNIFICATION CENTER FOLLOWING A FLASH FLOOD IN 2022. / MICHAEL CLUBB, THE ASSOCIATED PRESS



## Key findings

Generation180's analysis of data from the Federal Emergency Management Agency's (FEMA) [National Shelter System](#) via [Homeland Infrastructure Foundation-Level Data \(HIFLD\) Open](#),<sup>1</sup> National Center for Education Statistics (NCES) [Education Demographic and Geographic Estimates \(EDGE\) Program](#), and Generation180's national [census of solar in U.S. K-12 schools](#) found the following:

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**Schools account for over half of the 67,577 shelter sites** listed in the FEMA National Shelter System.



**Approximately one-third of U.S. public K-12 schools are identified by FEMA as shelters.** However, less than 0.1% of public K-12 schools across the country have an onsite battery energy storage system (BESS) that can supply backup power during a grid outage.

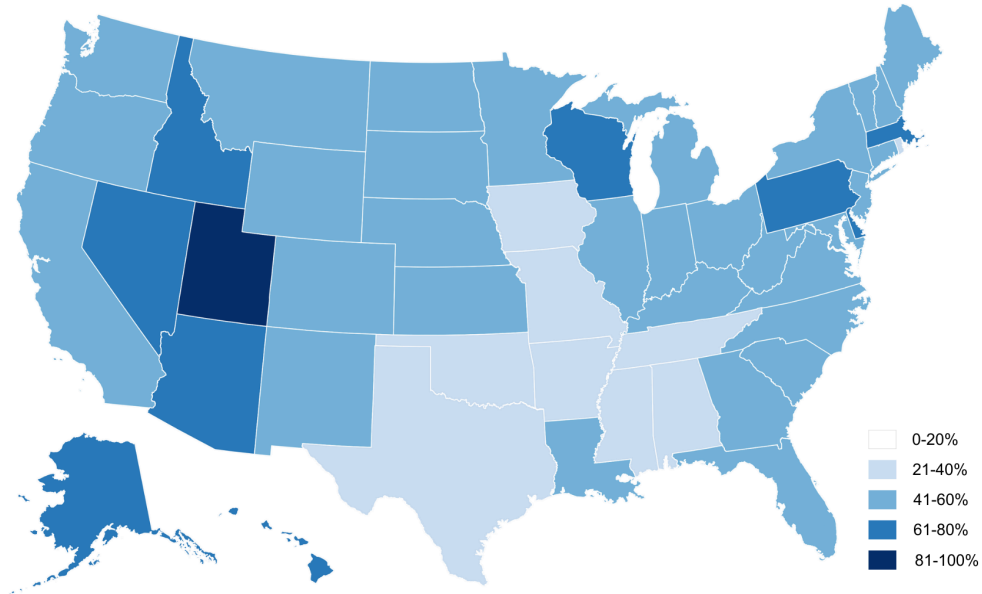
- SANTA BARBARA UNIFIED SCHOOL DISTRICT, CALIFORNIA / CALLIE FAUSEY, SANTA BARBARA INDEPENDENT

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<sup>1</sup> The FEMA National Shelter System data was downloaded from HIFLD Open on August 12, 2025. As of August 26, 2025, access to HIFLD Open, which contains public domain data for community preparedness and resiliency, was discontinued.



## Percentage of FEMA disaster shelters at K-12 Schools



## Ten states with the highest percentage of FEMA disaster shelters at schools

UTAH	84%
DELAWARE, MASSACHUSETTS	71%
ARIZONA	69%
ALASKA, DISTRICT OF COLUMBIA, NEVADA	65%
IDAHO	64%
WISCONSIN	63%
PENNSYLVANIA	61%



## Opportunities to build energy resilience at schools

While school campuses are being called upon to provide refuge for their communities during weather-related emergencies, they are not adequately equipped with the infrastructure to continue operating during power outages. Supporting energy resilience at school campuses nationwide is a critical strategy to prepare communities and schools for the impacts of natural disasters, extreme weather, and power outages.

Generation180 identifies strategies and opportunities for unlocking the potential of schools as community resilience hubs:

### Increase federal, state, and local funding and support for the development of resilience infrastructure at schools.

Public investment is essential to develop community resilience hubs across the country, yet there are insufficient funding resources available to support proactive development of energy resilience at schools or other disaster shelters. In April 2025, FEMA [announced](#) the cancellation of its Building Resilient Infrastructure and Communities (BRIC) program and the removal of Flood Mitigation Assistance (FMA) funding for 2025. BRIC and FMA are the federal government's two largest programs focused on hazard mitigation — actions communities take before disasters strike. Currently, the federal tax credit for energy storage is the only available federal financial resource that supports resilient, clean power at shelters. The [Clean Electricity Investment Credit](#) (Sec. 48e) enables the owner of an energy storage system to receive up to a 50% tax credit for a system placed in service through tax year 2033. Projects that begin construction after December 31, 2025 will need to meet material assistance rules for foreign entities of concern. Other rules and regulations will apply.

State incentives for energy storage have made California and Massachusetts the leaders in battery storage at K-12 schools. Florida has identified public schools as the backbone of its statewide evacuation shelter system in its Statewide Emergency Shelter Plan. Other states and localities can learn from and model these successful strategies.

- **Massachusetts:** In 2014–2015, the state invested \$58.5 million in its Community Clean Energy Resiliency Initiative, which helped fund solar plus energy storage systems at nine public schools and other shelter sites. Through its [Solar Massachusetts Renewable Target \(SMART\) program](#), solar projects are eligible



for an additional incentive for adding battery storage. In 2023, the Massachusetts Department of Energy Resources (DOER) announced an investment of \$50 million to catalyze energy storage deployment across Massachusetts through its [Advancing Massachusetts Power \(AMP\) program](#).

- **Florida:** Florida maintains an annual [Statewide Emergency Shelter Plan](#) that provides a list of hurricane evacuation shelters by county, location, and capacity. The plan reports that Florida public schools account for 97% of statewide hurricane evacuation shelter space. The plan provides guidance for educational facilities as emergency shelters. In addition, the Florida Building Code ([Section 453.25 Public Shelter Design Criteria](#)) requires that new educational facilities (K-12 and college) have areas designated as Enhanced Hurricane Protection Areas (EHPAs) that meet specific standards.



- RIVER GROVE ELEMENTARY SCHOOL IN OREGON WAS DESIGNED FOR ENERGY RESILIENCE AFTER THE COMMUNITY EXPERIENCED WILDFIRES AND DISRUPTIVE EXTREME WEATHER EVENTS. THE SCHOOL IS EQUIPPED WITH A MICROGRID THAT CAN KEEP PORTIONS OF THE BUILDING OPERATING DURING PROLONGED POWER OUTAGES. / TAYLOR METAL PRODUCTS



## Provide direct support to schools to plan for energy resilience.

Schools that are designated as emergency shelters need support to evaluate options for developing a solar microgrid, which is a self-sufficient system that is able to disconnect or ‘island’ from the grid and provide backup power during a grid outage. The solar panels provide a renewable, fuel-free energy source to recharge the batteries while the grid is down and also mitigate the greenhouse gas emissions that are causing the increased frequency and intensity of extreme weather events and natural disasters.

- **Generation180 Resources:** Generation180 provides free resources and information to schools interested in pursuing clean energy technologies. Search Generation180's interactive map at [SolarforAllSchools.org](https://SolarforAllSchools.org) to identify K-12 schools that have installed battery energy storage systems. Generation180 can also connect you with a member of its [School Leadership in Clean Energy \(SLICE\) network](#) who has installed battery energy storage systems or solar microgrids.
- **Clean Energy Group Resource:** Through the Resilient Power Project, Clean Energy Group offers a [Technical Assistance Fund \(TAF\)](#) to advance and accelerate the equitable deployment of resilient solar plus energy storage. The key purpose of the TAF is to fund preliminary technical and financial feasibility analyses of potential energy resilience projects powered primarily by solar photovoltaics (PV) combined with battery storage.
- **National Renewable Energy Laboratory Resource:** The free online [ReOPT tool](#) helps users evaluate the economic viability of a microgrid, explore strategies to achieve resilience goals, and estimate how long a system can sustain critical loads during a grid outage.



## SUCCESS STORY

### Dennis-Yarmouth Regional High School, Massachusetts



- DENNIS-YARMOUTH REGIONAL HIGH SCHOOL, MASSACHUSETTS / HOMES.COM

Two rare tornadoes struck Cape Cod in July 2019, leaving more than 45,000 residents without power. Amid the widespread blackout throughout Barnstable County, Dennis-Yarmouth Regional High School became a refuge for community members as a resilient emergency shelter. Five years before the tornadoes hit, Dennis-Yarmouth was equipped with a solar-powered battery backup system designed to keep the school operational during grid outages and to support critical loads, such as lighting, HVAC, food preparation, and emergency communications.

In 2014, the Massachusetts Department of Energy Resources Community Clean Energy Resiliency Initiative awarded a \$1.4 million grant to install 1.3 MW of solar photovoltaics with a 512 kW battery system at the high school. This resiliency project was a collaboration between the school district, Cape & Vineyard Electric Cooperative, and the Barnstable County Regional Emergency Planning Committee. Thanks to the collaboration across local government entities and financial support from the state, the school was prepared long before disaster struck.



## Conclusion

Generation180's analysis underscores the critical role that U.S. schools are expected to play in emergency preparedness and reveals that schools make up the majority of FEMA's designated disaster shelters. However, the nation's school infrastructure has not been adequately prepared to be community resilience hubs that can continue operating with reliable clean power during power outages. Currently, less than 0.1% of K-12 schools nationwide have been equipped with onsite solar plus energy storage systems that can power critical loads when the grid goes down. In order to close the gap, there needs to be a significant increase in federal, state, and local resources to develop an energy-resilient national shelter system, to scale up successful resilience models that rely upon clean power sources, and to provide direct support to schools that are being called upon to serve their communities in this way.



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